

**BOARD OF OIL, GAS AND MINING
2012 EARTH DAY AWARD NOMINATION**

REVIEW SHEET

NOMINATION: Anadarko Petroleum Corp.

ACTIVITY: Oil & Gas

CATEGORY: Environmental Improvement to an active mine site, drilling or recovery site, or field

STAFF RECOMMENDATION:



Invite nominee to make presentation in March



Do not invite

REASON:

REVIEWED BY:



RECEIVED

JAN 31 2012

DIV. OF OIL, GAS & MINING

2012
UTAH BOARD OF OIL, GAS AND MINING
EARTH DAY AWARDS

Nomination Form

Nominee Information

Company Name Anadarko Petroleum Corporation

Address 1368 South 1200 East

City, State, Zip Vernal, UT 84078

Contact Person Charles Chase

Phone (435) 781-9730

Site Name Greater Natural Buttes Project Area

Location Uintah County, UT

Activity and Category (Please check one activity and one category)

Activity

- **Oil and Gas**
- Minerals
- Coal

Category

- **Environmental improvement to an active mine site, drilling or recovery site, or field**
- Outstanding results following applications of innovative environmental technology
- Outstanding final reclamation or site restoration
- Other _____

Nominated By

Name **Charles Chase, Paul Wages, Colleen Faber**

Address **1368 S 1200 E**

City, State, Zip **Vernal, UT 84078**

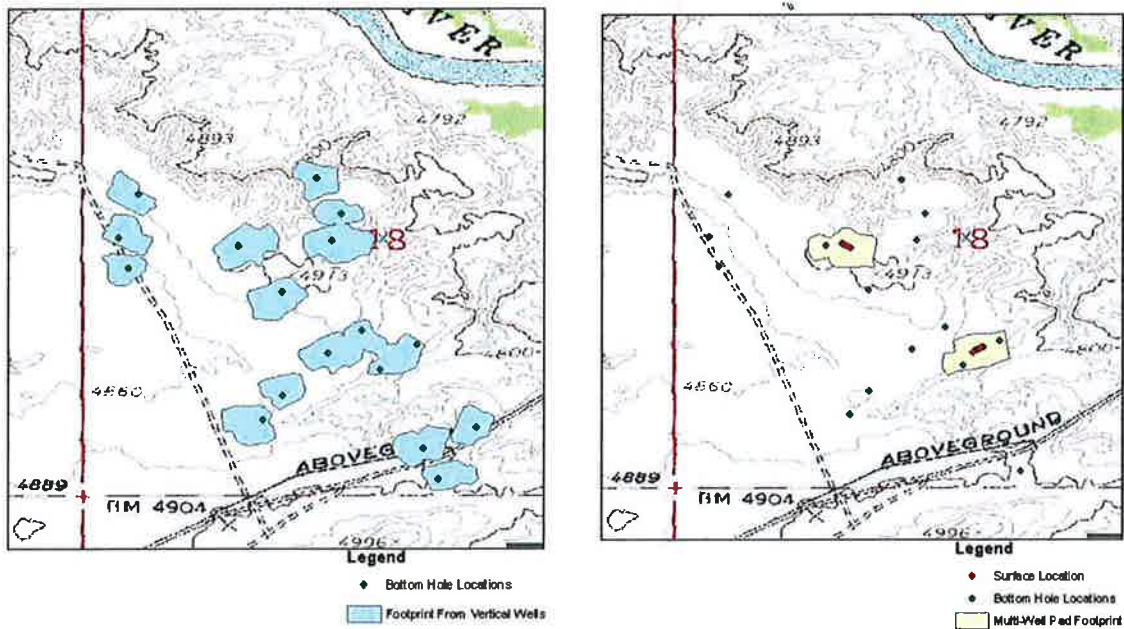
Phone **(435) 789-4433**

Nomination Summary (attach additional sheets, photos, etc., as necessary)

See Attached Pages

Return no later than January 31, 2012 to: Earth Day Awards, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801. Salt Lake City, Utah 84114-5801. Phone (801) 538-5324 Fax (801) 359-3940. Nominations may also be submitted electronically, email to jimspringer@utah.gov

ANADARKO PETROLEUM CORPORATION FOOTPRINT REDUCTION IN THE GREATER NATURAL BUTTES PROJECT AREA



The Above Illustration depicts drilling disturbance associated with 17 vertical wells (disturbance in blue). The adjacent illustration depicts disturbance reduction through the use of directional drilling using 2 multi-well pads (yellow) with surface holes shown in red and bottom hole locations shown in green. Original disturbance with vertical only development would have been approximately 70 acres. Using directional drilling this becomes approximately 8 acres.



Anadarko Petroleum Corporation continued to focus on its footprint reduction in 2011 by using aggressive interim reclamation. The above photo depicts a location with 4.04 acres of disturbance that will be recontoured and re-seeded (green area) leaving only .96 acres of long-term disturbance during the production life of the well. Through the use of directional drilling and aggressive interim reclamation, Anadarko is able to reduce a possible 85 acre footprint to less than 2 acres.

As development continues in the Greater Natural Buttes project in Uintah County, Anadarko Petroleum Corporation has been working to reduce the overall disturbance related to oil and natural gas production activities. Through advances in directional drilling and by optimizing placement, there has been a significant reduction in surface usage. Four wells can be drilled from a pad that is approximately 50%-75% larger than a single well pad. With the additional pad size after drilling was completed, we realized there was a significant amount of unused space on the pad during the producing life of the wells. In the past, interim reclamation consisted of backfilling the pit and re-vegetating that area, while the rest of the location not needed for producing the wells was unused. Anadarko now reclaims and re-vegetates as much of the unused areas as possible. The goal is to return the disturbed area to a condition similar to or better than the pre-disturbance conditions. This is done by re-contouring disturbed areas to blend in with the surrounding topography, restoring drainage features and re-seeding unused areas with native species adapted to the Greater Natural Buttes project area.

By minimizing the unused area on the well pads there has been a significant reduction of overall long-term disturbance on multi well pads. In the past, an average well pad would have anywhere from 1.75-3.5 acres of long-term disturbance, with 1.8 acres reclaimed. With the new reclamation strategy there is approximately .75-1.25 acres of long-term disturbance with 2.75-4.5 acres of reclamation. In many instances the reclaimed acreage per pad is more than doubled. With successful interim reclamation this land is no longer in a state of unused long-term disturbance. By re-vegetating and re-contouring this once unutilized land, erosion is prevented and locations blend with the surrounding undisturbed areas and drainage features.

In 2011, Anadarko Petroleum Corporation conducted aggressive interim reclamation on 39 new locations on SITLA (School and Institutional Trust Land Administration) surface accounting for 150 acres of reclamation, which averages to approximately 3.85 acres of reclamation per pad. Using the previous style of interim reclamation these same well locations would have had approximately 70.2 acres of reclaimed surface (average of 1.8 acres reclaimed per location). By implementing this new aggressive interim reclamation strategy, Anadarko has doubled the amount of area returned to a self-sustaining, vigorous diverse native plant community regaining its original productive and scenic potential.

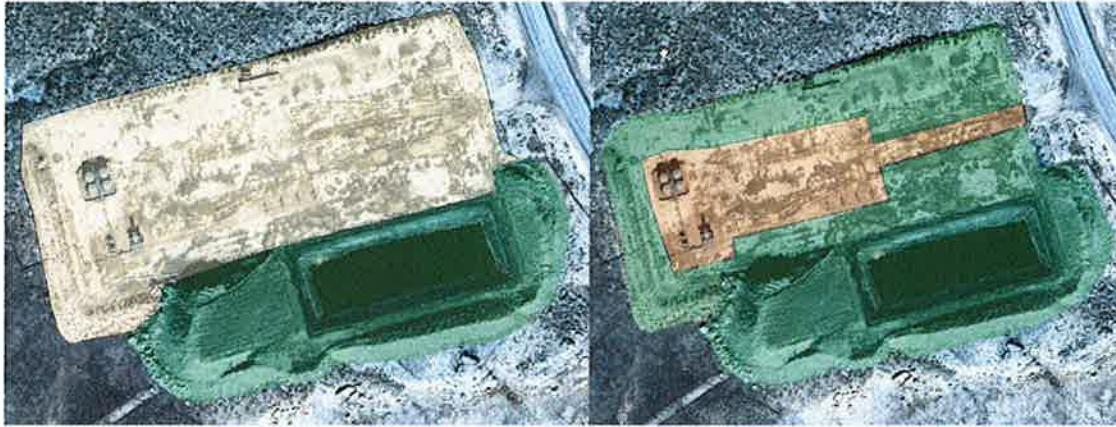


Figure 1: Historic Interim Reclamation (left) vs. Aggressive Interim Reclamation (right). Green shaded area represents interim reclamation area. In this specific example (Natural Buttes Unit 921-25L Pad), the reclaimed acreage on the left is 1.8 acres (green) compared to 3.0 acres (yellow) of long-term disturbance. Through aggressive interim reclamation, the reclamation area is 3.9 acres (green) while the long-term disturbance area is .97 acres (brown).



Figure 2: Aggressive Interim Reclamation. Note the rough surface surrounding and darker colored soil, this area is the interim reclamation area that will be re-vegetated. The relatively smooth and lighter colored soil is the long-term disturbance needed for the producing life of the wells.



Figure 3: Aggressive Interim Reclamation. Again note the rough surfaced, darker colored soil interim reclamation area and smooth, lighter colored soil in the long-term disturbance area.



Figure 4: Topographic Diversity. Note the level of contouring and shaping on the pad. By blending locations in with the surrounding topography water courses are able to function better, and the locations blend better. The use of shorter tanks and environmentally preferred colors aids in helping locations blend in with the native surroundings as well.



Figure 5: Anadarko has realized successful reclamation in its Greater Natural Buttes operations. This photo shows successful reclamation for an older well location. The establishment of the native grass and shrub species on this location helps it blend with the natural surroundings and provides forage and cover for wildlife species in the area.